

FOLDING CARTON

FIELD OF THE INVENTION

[0001] The present invention is related in general to cartons for holding and transporting food and, more particularly, to cartons that are folded together from pre-cut, planer blanks.

BACKGROUND OF THE INVENTION

[0002] Foldable containers are commonly used in the food and beverage industry to store and transport prepared foods. Such cartons are typically distributed as planer cutouts, or blanks, that can be folded together at the site of the food preparation to define an enclosed volume for holding the prepared food. The blanks may be formed from paper board, plastic resin materials, or foam materials such as styrofoam. Among the advantages offered by using such materials are their low cost, their thermal insulation properties, and/or their beneficial environmental attributes. Among the advantages of designing the carton to be assembled from a foldable blank is that the blanks are simple to manufacture and can be easily distributed and stored in a stacked relationship.

[0003] Desirably, the folding sequence necessary to assemble the carton from the blank should be quick and simple to perform. Additionally, the blank should be provided as a unitary piece that does not require additional parts to produce the assembled carton. The carton should be assembled in a manner that prevents the carton from unintentionally unfolding. Also desirably, to prevent thermal and food leakage, the assembled carton should be substantially sealed. Furthermore, to allow for multiple uses, the carton should be configured to be re-closable.

BRIEF SUMMARY OF THE INVENTION

[0004] The present invention provides a carton that is folded together from a planer blank. To define an enclosed volume when assembled, the carton includes a base panel and four generally upright, opposing side panels that intersect one another and extend from the base panel. To enclose the volume, a cover hingedly extends from one side panel and can be folded adjacent to the upper edges of the remaining three side panels. For sealing the closure gap between the three side panels and the cover, each of the side

panels has extending inwardly from its upper edge a flange that is located partially underneath the cover. To provide sealing between the side panels, a gusset that acts as a retention web is located at each corner formed by the intersection of two adjacent, upright side panels.

[0005] To hold the carton together once it is assembled, each gusset has extending from its upper edge a tab. When the side panels are in their upright position, the gussets can be folded adjacent to each side panel and each tab can be folded adjacent to one of the flanges and adhesively attached thereto. In an embodiment of the invention, adhesive spots can be pre-placed on the portions of the blank that form the tabs. Alternatively, the tab may be inserted in a slot formed between the side panels and the flanges. To facilitate the re-closable feature of the carton, the cover can include a closure tab that is releasably received in a slot formed between one of the flanges and that flange's respective side panel. In an embodiment of the present invention, to view the enclosed volume when the cover is folded adjacent to the flanges and side panels, a plastic window can be disposed to permit viewing through the cover proximate to the enclosed volume.

[0006] The carton can be folded together from a pre-cut, unitary blank in which fold lines are formed that distinguish the various parts of the assembled carton, all of which are included as part of the blank. The fold lines function to guide and facilitate assembly of the carton in a quick and simple manner. Because the unitary blank has a generally planer dimension, numerous blanks can be compactly stored in a stacked relationship at the site of the food preparation.

BRIEF DESCRIPTION OF THE DRAWINGS

- [0007] FIG. 1 is a front perspective view of a carton as assembled from a planer blank.
- [0008] FIG. 2 is a front elevational view of the assembled carton of FIG. 1.
- [0009] FIG. 3 is a side elevational view of the assembled carton of FIG. 1.
- [0010] FIG. 4 is a top plan view of a pre-cut blank as unfolded illustrating a base panel, side panels, gussets, flanges, and a cover, from which the carton of FIG. 1 is assembled.
- [0011] FIG. 5 is a perspective view of the unfolded blank laid flat for assembling the carton.

[0012] FIG. 6 is a perspective view of the blank with the side panels being folded upright.

[0013] FIG. 7 is a perspective view of the blank with the side panels being folded upright and the gussets extending outwards.

[0014] FIG. 8 is a perspective view of the blank with the side panels upright and the gussets being folded adjacent to the side panels.

[0015] FIG. 9 is a perspective view of the carton assembled from the blank with the flanges of the first and third side panels being folded inwards.

[0016] FIG. 10 is a perspective view of the carton assembled from the blank with the flange of the second side panel being folded inwards.

[0017] FIG. 11 is a perspective view of the carton assembled from the blank with the cover being folded adjacent to the inward extending flanges.

[0018] FIG. 12 is a perspective view of the carton assembled from the blank folded together with an insert tucked into a slot behind the second side panel.

[0019] FIG. 13 is a perspective view of another embodiment of the carton with the side panels upright, the gussets being folded into slots, and a windowless cover.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

[0020] Now referring to the drawings, wherein like reference numerals refer to like elements, there is illustrated in FIG. 1 a carton 100 for enclosing food items. The carton 100 has a three-dimensional, generally trapezoidal shape that defines an enclosed volume. The inventive carton, though, is not intended to be limited to the illustrated trapezoidal shape and it will be appreciated that other shapes, such as cubic or rectangular, can readily be formed. The blank can be formed from a variety of materials suitable for containing foods such as paperboard, plastic or natural resins, and foam materials. Paperboard blanks may be corrugated or uncorrugated and preferably may be laminated. For blanks made of plastic resins, an example of a suitable resin is laminated polystyrene. Additionally, the plastic resin material maybe filled or unfilled. An example of a suitable foam material is styrofoam.

[0021] The carton 100 includes a rectangular base portion 110 and four generally upright, planer side panels extending from the edges of the base portion. The side panels are hereinafter referred to as the first side panel 112, the second side panel 114, the third

side panel 116 and the fourth side panel 118. The first and third side panels 112, 116 are arranged to form a first opposing pair while the second and fourth side panels 114, 118 are similarly arranged to form a second opposing pair. The pairs intersect each other at their side edges to form a first corner 122, a second corner 124, a third corner 126, and a fourth corner 128. To produce the preferred trapezoidal shape of the carton 100, as illustrated in FIGS. 2 and 3, the side panels 112, 114, 116, 118 taper outward as they extend from the bottom panel 110.

[0022] Referring to FIG. 1, also included for enclosing the carton 100 is a re-closable cover 120 that is located adjacent to the upper edges of the side panels and is substantially parallel to the bottom panel 110. To permit viewing of the internal volume, in the illustrated embodiment, there is disposed through the cover 120 a window 121.

Preferably, the window 121 is sealed with cellophane or other clear material glued to the interior surface of the cover 120 and covers the entirety of the opening in the lid.

[0023] Referring to FIG. 4, the carton is preferably assembled from a planer blank 130 of paperboard, plastic resin, foam material, or similar material. The blank 130 can be cut from sheet stock in an automated, high volume process. In embodiments made of paperboard to prevent seepage through the panels of the assembled carton, one or both surfaces of the blank 130 may be coated with a liquid resistant coating such as a wax or a plastic resin lamination which is compatible with food materials. The blank 130 is unitary in that all the parts forming the container are contiguously included within the blank. As such, only the blank 130 needs to be distributed for producing the container.

[0024] As illustrated in FIG. 4, the blank 130 is generally symmetrical about axis 124. Within the blank, the various parts that form the container are distinguished from one another by fold lines or scoring formed into the blank. The fold lines or scoring facilitate the folding together of the carton and can be formed when the blank 130 is cut. The formation of fold lines or scoring is well understood by those of skill in the art and need not be described in detail here.

[0025] The base panel 110 is generally rectangular. Contiguous to and extending outward from the base panel 110 at a first side panel fold line 132 is the first side panel 112. Also extending outward from the base panel 110 in the opposite direction is the third panel 116, the base panel and the third side panel being contiguous along a third side panel fold line 136. Likewise, second and fourth side panels 114, 118 extend from the

base panel 110 at second and fourth side panel fold lines 134, 138 respectively. To form the preferred trapezoidal carton, the panels have a trapezoidal shape with the narrow base of the trapezoid corresponding to the respective side panel fold lines.

[0026] Contiguous to and extending outward from the first side panel 112 along a first flange fold line 152 is a first flange 142. The outermost edge of the first flange 142 defines part of the outline of the blank 130. Contiguous to and extending outward from the second and third side panels 114, 116 along second and third flange fold lines 154, 156 are second and third flanges 144, 146, the outermost edges of which also define part of the outline of the blank. The flanges each have a generally rectangular shape with the outermost two corners being rounded.

[0027] Contiguous to and extending outward from the fourth side panel 118 along cover fold line 158 is the cover 120, the outer most edges of which further define the outline of the blank 130. The length that the cover 120 extends from the fourth side panel 118 is substantially larger than the length that any of the flanges 142, 144, 146 extend from their respective side panels 112, 114, 116. To form the window 121, the center of the cover 120 is cut out thereby forming a first edge 160, a second edge 162, a third edge 164, and a fourth edge 166 that define a frame. Cellophane or other appropriately clear or translucent material can be placed across the frame and glued or otherwise secured to the edges. Referring to FIG. 13, in other embodiments, the cover 250 can be formed without a window.

[0028] The first side panel 112 and the second side panel 114, which are generally perpendicular to each other, are joined together by a web of the blank material hereforth referred to as a gusset 170. The gusset is contiguous with the first side panel 112 along a first gusset fold line 172 and is likewise contiguous with the second side panel 114 along a second gusset fold line 174. The gusset fold lines 172, 174 define the side edges of the respective side panels 112, 114. The gusset fold lines 172, 174 intersect each other at the corner of the base panel 110 defined by the first and second side panel fold lines 132, 134. The gusset 170 is thus generally shaped as a triangle. Bisecting the triangular gusset is a bisection fold line 176 which defines a first gusset half 178 and a symmetrical second gusset half 180.

[0029] Notably, the gusset 170 and the first and second gusset fold lines 172, 174 extend only along the first and second side panels 112, 114 thereby defining the

outermost edge 182 of the gusset which is co-extensive with the start of the first and second flanges 142, 144. Extending from the edge 182 of the gusset 170 between the bisection fold line 176 and the second gusset fold line 174 is a tab 184. The tab 184 may be of any suitable shape.

[0030] A second, third and fourth gussets 190, 200, 210 are similarly formed between the second and third side panels 114, 116, the third and fourth side panels 116, 118, and the fourth and first side panels 118, 112, respectively. Extending from each of the second, third and fourth gussets 190, 200, 210 are a second, third, and fourth tab 194, 204, 214, respectively.

[0031] To assemble the carton from the blank, the blank 130 is first laid flat as illustrated in FIG. 5. Referring to FIGS. 6 and 7, the first, second, third, and fourth side panels 112, 114, 116, 118 are folded in the same direction about the first, second, third and fourth side panel fold lines 132, 134, 136, 138, respectively. Because of the side panel fold lines function as pivots, the side panels fold inwardly to define the volume. As illustrated in FIG. 8, the edges of the first and second side panels join together along first gusset fold line 172 and second gusset fold line 174 to form the first corner 122. The second, third and fourth corners 124, 126, and 128 are likewise formed.

[0032] Referring to FIG. 7, as the first and second side panels 112, 114 are folded upward and together, the material forming the first gusset 170 is forced outwards external of the volume. Moreover, as the first gusset fold line 172 and the second gusset fold line 174 come into contact, the first gusset half 178 and second gusset half 180 are folded adjacent to each other about the bisection line 176. As illustrated in FIG. 8, the gusset 170 is thereby folded into a triangular shape that extends externally along the corner 122. It should be appreciated that since the first and second side panels 112, 114 and the first gusset 170 are all contiguously interconnected along the various fold lines, the first corner is substantially sealed against leakage. The remaining corners 124, 126, 128 are likewise sealed.

[0033] Referring to FIGS. 8 and 9, to position the externally extending gusset in a location where it will not interfere with handling of the carton, the gusset 170 is folded adjacent to the external surface of the first side panel 112 so that the edge 182 of the gusset is coextensive with the first flange fold line 152. Referring to FIG. 9, when the gusset 170 is so positioned, the upward extending tab 184 is adjacent to the upward

extending flange 142. The fourth gusset 210 is also folded adjacent to the external surface of the first side panel 112 while the second and third gussets 190, 200 are folded adjacent to the external surface of the third side panel 116.

[0034] To prevent the carton from unfolding, adhesive can be applied to the tab 184 to securely hold the tab to the flange 142. When the tab is so attached to the flange, the gusset 170 is held adjacent the first side panel 112 thereby holding the first side panel in its upright position. The fourth tab 214 is also adhesively attached to the flange 142 while the second and third tabs 194, 204 are adhesively attached to the opposite flange 146. The adhesive can be applied when the carton is assembled or, in another embodiment, can be pre-placed on the blank. For instance, referring to FIG. 4, each tab 184, 194, 204, 214 has placed on it during the production of the blank an adhesive spot 186, 196, 206, 216. To prevent the adhesive spots from interfering with the stacking and distribution of the blanks, the adhesive spots 186, 196, 206, 216 can be covered with a peal-off wrapping. Notably, when the adhesive spots are pre-placed on the blank, the side panels should be folded about the side panel fold lines in a direction as indicated by the side of the blank on which the adhesive spots are placed.

[0035] Alternatively, as illustrated in FIG. 13, each tab 184, 194, 204, 214 can be inserted into an optional slot 240, 242, 244, 246 located in the fold lines 152, 156 separating the flanges and side panels. As such, no glue is used in the formation of the container and the adhesive spots can be eliminated from the blank. For example, as gusset 170 is folded adjacent side panel 112, tab 194, which has been folded over with respect to the gusset, is received in and substantially held by slot 242 disposed between the side panel and the flange 142.

[0036] Referring to FIG. 9, to enclose the carton 100, the first flange 142 and the opposing third flange 146 are folded inwardly about the first flange fold line 152 and the third flange fold line 156, respectively, such that the flanges are generally parallel with the base panel 110. The tabs 184, 194, 204, 214, being adhesively secured to the flanges 142, 152, also fold inward about the edges of the gussets. Referring to FIG. 10, the second flange 144 is likewise folded inward about the second flange fold line 154. The outer corners of the second flange 144 overlap the corner portions of the first and third flanges 142, 146.

[0037] Referring to FIG. 11, the cover 120 is next folded about the cover fold line 158 such that the cover will overlap the inwardly folded first, second and third flanges 142, 144, 146 and will be generally parallel to the base 110 panel. As illustrated in FIG. 12, the cover 120 is dimensioned so that it extends between the first and third side panels 112, 116 as well as between the second and fourth side panels 114, 118. Because of the overlay between the cover and the inward extending flanges, the carton is sealed against leakage between the cover and the side panels. Preferably, the length which the flanges extend underneath the cover is dimensioned so that the flanges are concealed by the first, third and fourth edges 160, 164, 166 of the cover 120 and do not obscure the window 121. Alternatively, in the embodiment illustrated in FIG. 13, the window can be eliminated from the cover 250 so that the lengths of the flanges are unimportant.

[0038] Referring to FIG. 11, to hold the cover 120 adjacent to the flanges in a re-closable manner, the cover has extending from its outermost edge one or more closure tabs 220. In the illustrated embodiment the closure 220 is centrally located on the cover 120 so that it can be received in a corresponding slot 222 formed between the second flange 144 and the second side panel 114. As illustrated in FIG. 12, when so received, the closure tab 220 is tucked behind the second side panel 114. To open the container, the closure tab 220 is removed from the slot 222 by pulling the cover 120 upwards with respect to the second side panel 114. As illustrated in FIG. 4, the closure tab 220 and slot 222 can be formed when the blank 130 is produced. In another embodiment of the carton, the cover can have extending from its outermost edge two spaced apart closure tabs that correspond with, and can be received in, two slots formed between the flange and second side panel.

[0039] Thus, the present invention provides a re-closable carton for holding and transporting food items. The carton can be assembled from pre-cut, foldable blanks of paperboard, resin, foam material, or other suitable material to define a volume enclosed by multiple carton panels. To prevent thermal and food leakage, the carton includes gussets and flanges that substantially seal the intersections of the various panels. To prevent the carton from unintentionally unfolding, the panels can be held in an upright position by the use of adhesive. The cover of the carton is hinged to a side panel and includes an insert that can be removably inserted into a slot for closing and reopening the carton. The cover can include a window for viewing the enclosed volume.

[0040] The use of the terms “a” and “an” and “the” and similar referents in the context of describing the invention (especially in the context of the following claims) are to be construed to cover both the singular and the plural, unless otherwise indicated herein or clearly contradicted by context. All methods described herein can be performed in any suitable order unless otherwise indicated herein or otherwise clearly contradicted by context. The use of any and all examples, or exemplary language (e.g., “such as”) provided herein, is intended merely to better illuminate the invention and does not pose a limitation on the scope of the invention unless otherwise claimed. No language in the specification should be construed as indicating any non-claimed element as essential to the practice of the invention.

[0041] Preferred embodiments of this invention are described herein, including the best mode known to the inventors for carrying out the invention. Of course, variations of those preferred embodiments will become apparent to those of ordinary skill in the art upon reading the foregoing description. The inventors expect skilled artisans to employ such variations as appropriate, and the inventors intend for the invention to be practiced otherwise than as specifically described herein. Accordingly, this invention includes all modifications and equivalents of the subject matter recited in the claims appended hereto as permitted by applicable law. Moreover, any combination of the above-described elements in all possible variations thereof is encompassed by the invention unless otherwise indicated herein or otherwise clearly contradicted by context.